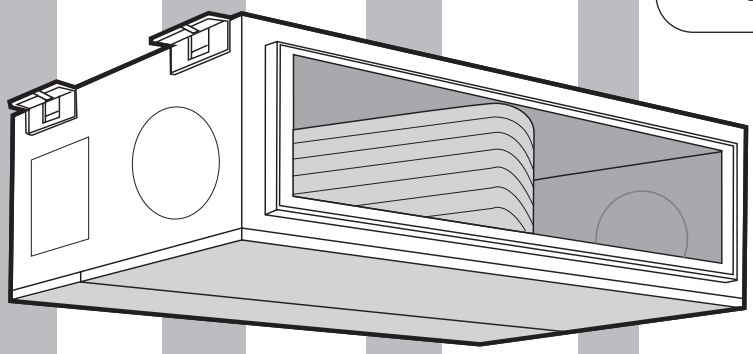
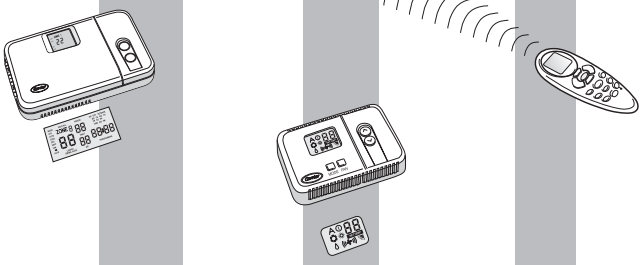
Carrier

40DMC





INSTALLATION MANUAL GB

40DMC

GB

DUCT MOUNTABLE CEILING UNIT

Carrier

Carrier

DUCT MOUNTABLE CEILING UNIT

(cooling and heat pump heating mode only)

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Safety precautions

Read this instruction manual thoroughly before using the appliance.
Keep all installation, operating and maintenance instructions carefully and hand them on if you transfer the appliance to another owner.
This appliance conforms to the Low Voltage Directive (73/23 EEC) and Electromagnetic Compatibility Directive (89/336 EEC).
It must be installed by qualified personnel only.
The appliance must be installed in an area which is not accessible to the public.

WARNING! Always disconnect the appliance from the mains supply before starting any maintenance work and before accessing any internal components.

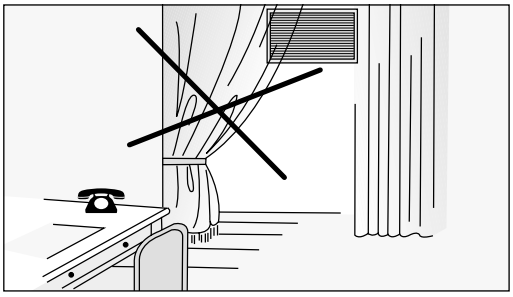
• Follow all the precautions listed below. They are essential to safety.
• Check that the appliance has not been damaged in transit. If any damage is visible, report it to the carrier immediately.
• Make sure that the voltage and frequency of the mains electricity supply correspond to the specifications on the appliance. Also make sure that the mains supply has sufficient installed power for the appliance to operate simultaneously with any other electrical appliances that might be connected to the same power line.
• To avoid fire, explosion and injury, never operate the appliance in the presence of dangerous substances or near appliances that produce naked flames.
• In particular make sure that the appliance is efficiently earthed.
• The system must be connected to the mains electricity supply in accordance with the wiring diagram in the outdoor section installation manual.
• Make sure that the appliance is installed in compliance with all applicable national safety standards.
• The appliance can only operate correctly and without risk provided it has been installed and tested by specialist personnel.
• After installation, carry out functional testing and instruct the user in the operation of the system.
• This manual describes the installation of the indoor unit of a split system consisting of two Carrier units. Coupling different units equipped with different control systems can damage the systems and invalidates the respective warranties. The manufacturer accepts no responsibility for system malfunctions deriving from unapproved coupling.
• The manufacturer declines all responsibility for damage or injury caused by unauthorised modifications to the appliance or incorrect electrical or coolant connections.
• Failure to observe the instructions given in this manual or use of the appliance in conditions other than those specified in the “Operating Limitations” table in the appliance’s installation manual automatically invalidates the warranty.
• Only use the appliance for the purpose for which it is intended. The indoor unit is not suitable for use in washrooms.
• Do not use the appliance if it is damaged. In the event of any malfunctioning, switch the appliance off immediately and disconnect it from the mains electricity supply.
• Only qualified personnel are authorised to clean inside or maintain the appliance.
• Arrange for periodic checks to be carried out on the unit, the electrical connections, the coolant pipes and the safety devices (these operations must be carried out by qualified personnel only).
• This appliance contains moving parts. Make sure that children cannot get at them.

• All materials used in the manufacture and packing of this appliance are recyclable.

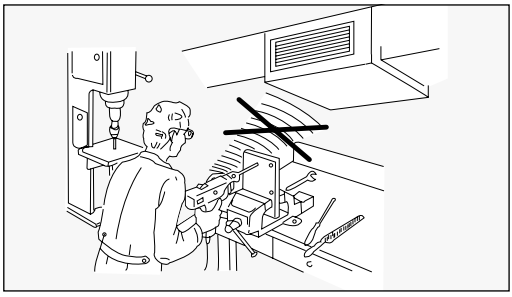
• Dispose of packing material and used batteries from the (optional) remote control in compliance with applicable legislation.

• This appliance is an air conditioning system and contains a refrigerant that must be disposed of according to specific procedures. At the end of the useful life of the appliance, take it to a proper recycling or disposal centre or return it to the dealer so that it can be disposed of correctly.

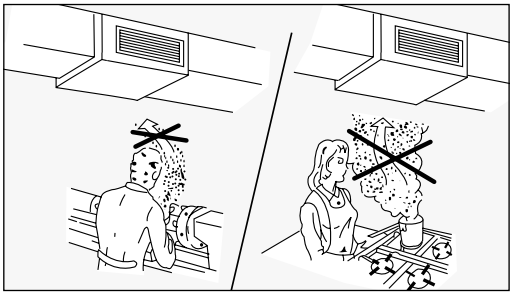
Warnings: avoid



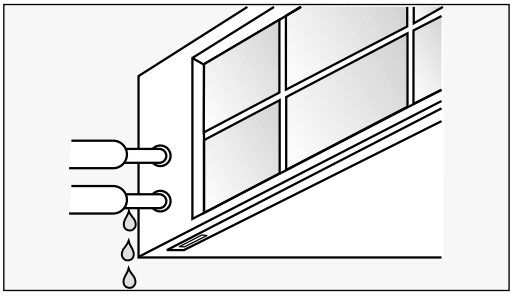
... obstructing the air intake or outlet.



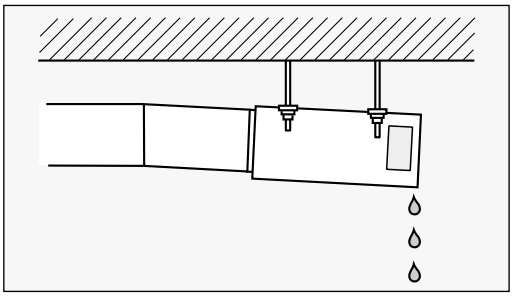
... installing in environments affected by high frequencies.



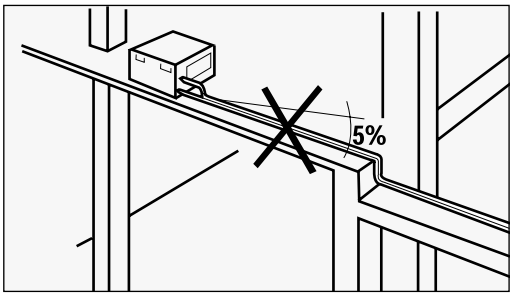
... installing in environments where oil vapour is present.



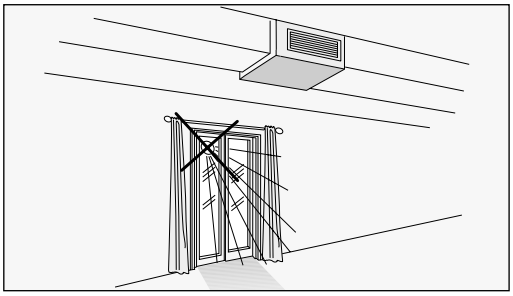
... partial insulation of pipes.



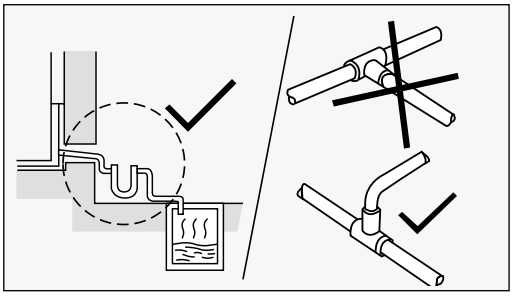
... installing out-of-level: this causes dripping.



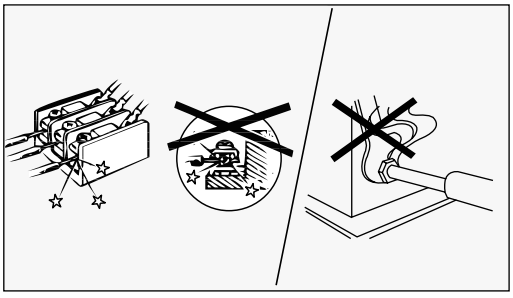
... horizontal sections and bends in the condensate drain pipe which do not have a minimum gradient of 5%.



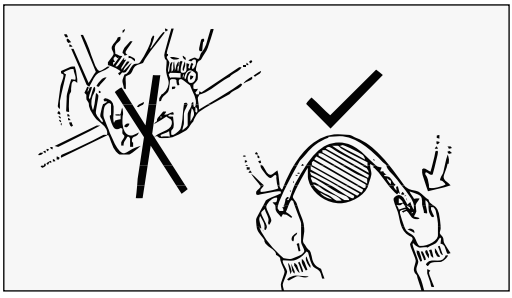
... in cooling mode, direct entry of sunlight into the room: draw the curtains.
... installing in places near heat sources, which could damage the unit.



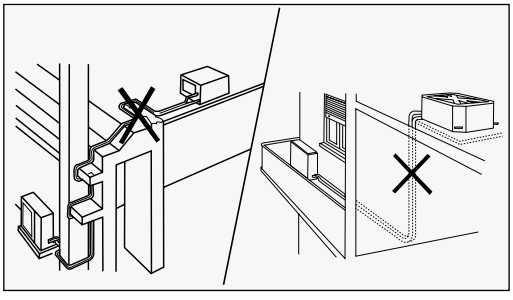
... routing the condensate drain pipe to a residential drain or sewer network without a siphon. The height of the siphon in relation to the available head must be such as to allow correct evacuation of condensate.



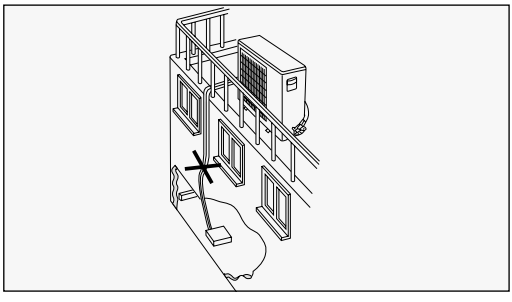
... loose electrical connections.
... loosening the coolant connections after connecting them (loss of refrigerant charge).



... crushing the coolant connection pipes and the condensate drain pipe.



... too many bends between indoor and outdoor units (see outdoor unit installation manual).
Excessive distance between indoor and outdoor units (see outdoor unit installation manual).



... an excessive height difference between the indoor and outdoor units (see outdoor unit installation manual)

Weights and dimensions

1. Coil
2. Fan
3. Condensate collection tray
4. Drainage connection Ø AP
5. Fresh air intake
6. Electrical panel
7. Unit frame
8. Air filter
9. Liquid Ø AM
10. Gas Ø AN

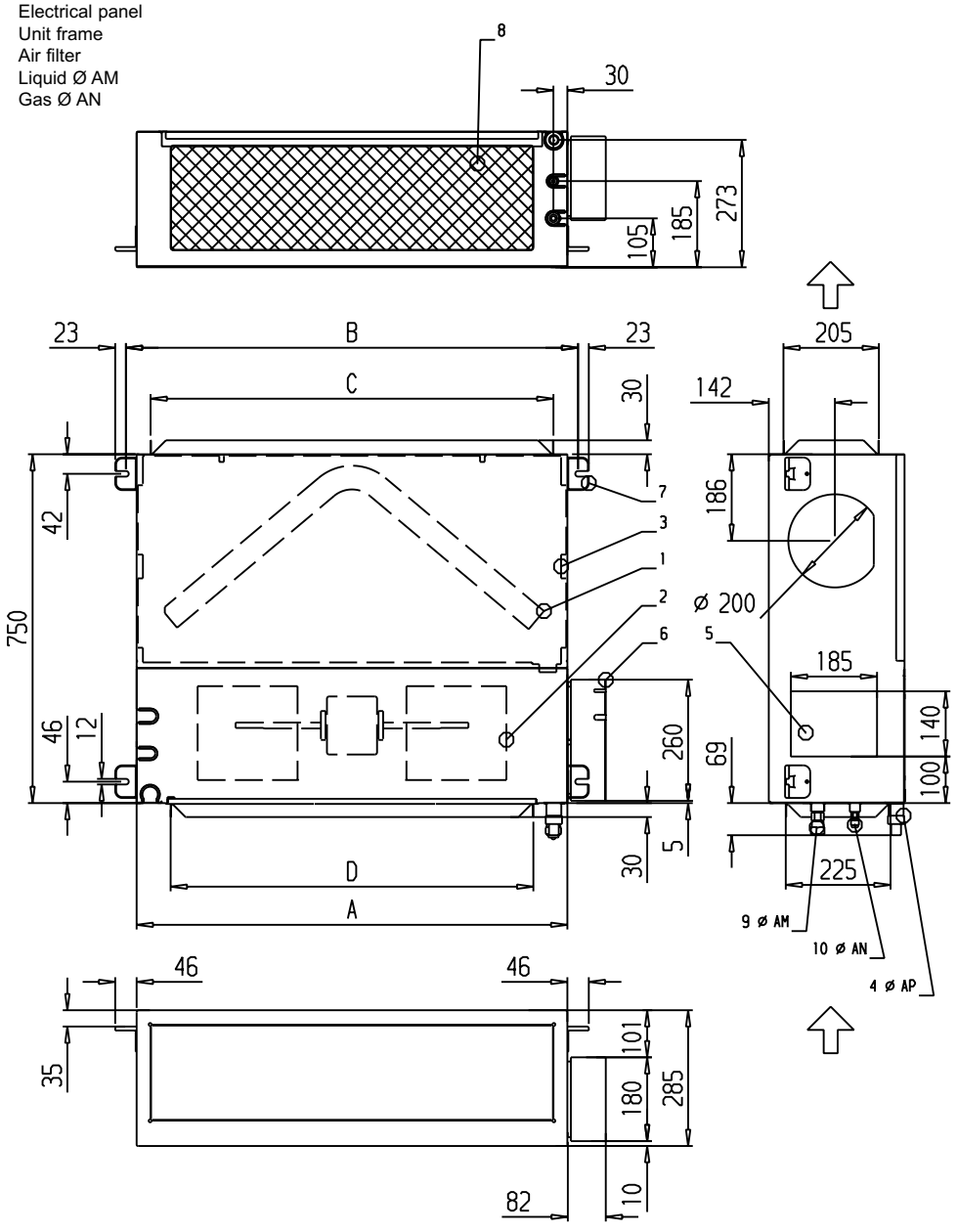


Table I: Weights and geometric dimensions

40DMC	ØAM	ØAN	ØAP	kg
018	1/4”	1/2”	21	32
024	1/4”	1/2”	21	35
028	1/4”	5/8”	21	35
036 - 052	3/8”	3/4”	21	48
060	3/8”	3/4”	21	53

40DMC	A	B	C	D
018 - 024 - 028	925	971	865	779
036 - 052 - 060	1325	1371	1265	1179

NB: All measurements are expressed in mm.

Technical data

Table II: Nominal data

Maximum electrical consumption values [W] Cooling and heat pump heating mode only	
Unit	**Cooling / Heating**
40DMC018	140
40DMC024	160
40DMC028	250
40DMC036	365
40DMC052	430
40DMC060	580

Notes: For sizing the system’s electrical supply cable and slow-blow fuses, consult the outdoor unit installation manual. Consumption values are measured with free inlet and outlet at High speed and with a voltage of 264 V ~ 50 Hz.

Table III: Operating limits

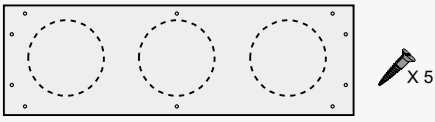
	Operating temperature (cooling only or heat pump)	Refer to the outdoor unit installation manual	
40DMC018 **40DMC024** **40DMC028** **40DMC036** **40DMC052** **40DMC060**	**Electrical supply**	Single phase rated voltage Operating limit voltage	230 V ~ 50 Hz min 198 V - max 264 V

Table IV: Outdoor static pressure

40DMC0	**18**	**24**	**28**	**36**	**52**	**60**
Nominal static pressure (Pa)	50	50	50	80	80	80
Maximum pressure (Pa)	Refer to the “Installation” section					

Items supplied with the unit

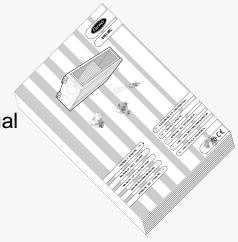
Table V: Items supplied with the unit



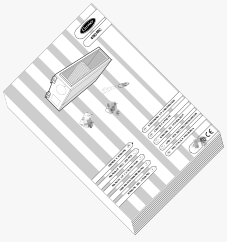
Front enclosure panel with pre-scored holes for duct connection + extra screws

DRILLING TEMPLATE

Installation Manual



“Use and Maintenance” Manual



Installation

SELECTING THE INSTALLATION POSITION

• The 40DMC unit is designed ducted installation in suspended ceilings.
• The unit must not be accessible to the public.
• As a rule, the unit cannot be installed at a height of less than 2.5 m.
• It is possible to install the unit at a height of between 2.2 m and 2.5 m from the ground if the system is configured for intake from the rear. In this case, it is necessary to provide an intake duct with minimum length of 250 mm.

Avoid the following:

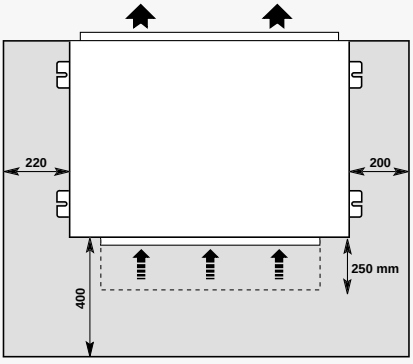
• Positions exposed to direct sunlight.
• Areas near heat sources.
• Damp places and positions in which the unit could come into contact with water (e.g. laundry rooms).
• Rooms in which shelving or furniture may obstruct the flow of air.

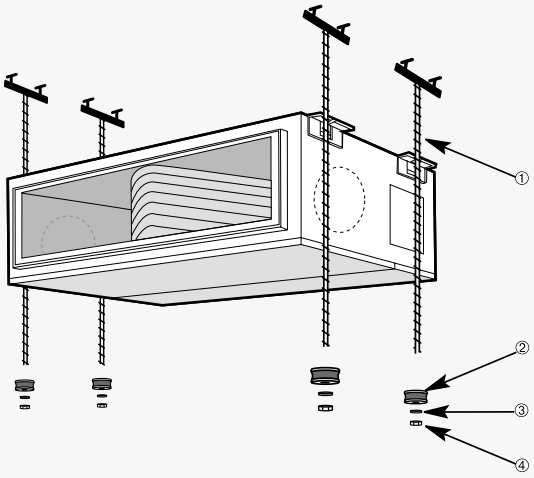
Do the following:

• Select a position capable of supporting the weight of the operating unit.
• Leave sufficient space around the unit for maintenance and free circulation of air (see figure).
• Leave an aperture in the suspended ceiling or ensure that a part of the latter can be removed for carrying out maintenance operations on the unit.
• Select a place which is free from dirt, foreign bodies or other material that may obstruct the coil.
• Suitable dampers must be placed between the brackets of the unit and the hanging system so as to prevent noise transmission.
• Install the unit in such a way that condensate can be drained easily to a suitable waste outlet.

Note: A drilling template has been provided on the unit packaging to facilitate installation.

Service area



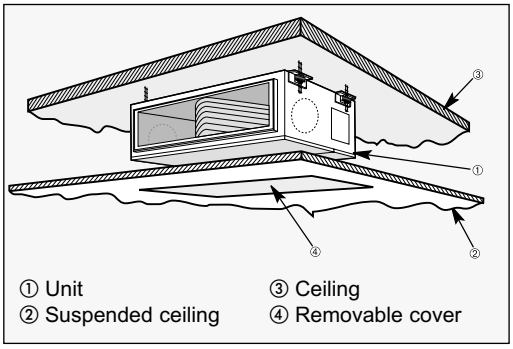


① Bars to be screwed in
② Anti-vibration dampers
③ Washer
④ Nut

INSTALLING THE UNIT

Important: the unit must be correctly levelled.

Insert the 4 M8 threaded tie rods into the ceiling. Insert the other end of the tie rods through the slots in the hanging brackets on the sides of the unit. Position the anti-vibration dampers, add the washers and tighten the nuts until the unit is correctly fixed and levelled. If space permits, place a layer of rubber or neoprene between the ceiling and the unit.



① Unit
② Suspended ceiling
③ Ceiling
④ Removable cover

On completion of these operations it is necessary to:

• install a suspended ceiling to conceal the unit;

• include a removable panel for future maintenance work;

• fit suitably sized grilles in the suspended ceiling to allow air intake.

CONDENSATE DRAINAGE

Important: do not lift the unit by means of the condensate drain pipe.

All units are equipped with a condensate collection tray with 21 mm external Ø drain pipe.

Therefore fit a pipe for the evacuation of condensate.

Adhere to the following recommendations:

• Use pipes in galvanised steel, copper or transparent plastic. Do not use normal garden hoses.

• Use material which ensures that the drain pipe connections are totally sealed.

• If using rigid material for the outlet pipe, fit a number of flexible couplings to absorb any vibrations from the unit.

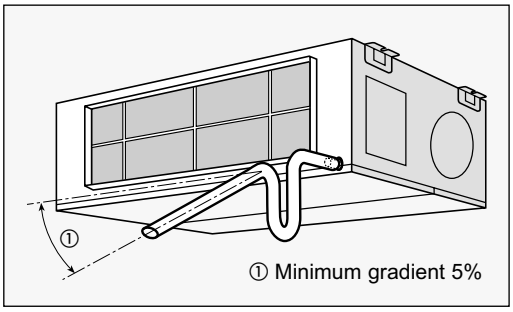
• The drainage line must always be below the connection itself, with a suitable gradient to facilitate outflow.

• Pour a few litres of water into the condensate collection tray and check that it flows out correctly. If not, check the gradient of the pipes and look for possible obstructions.

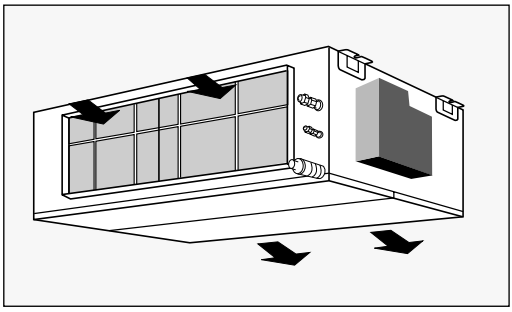
INTAKE CONFIGURATION

Important: units configured for intake from below must not be installed at a height of less than 2.5 m from the ground.

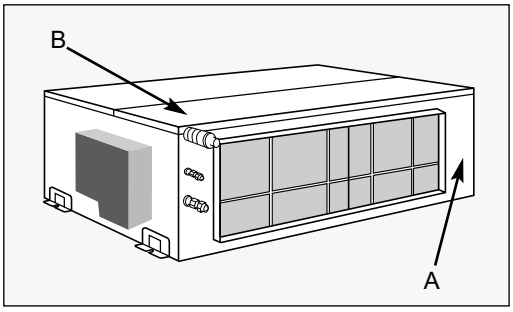
The unit is factory-configured for air intake from the rear.

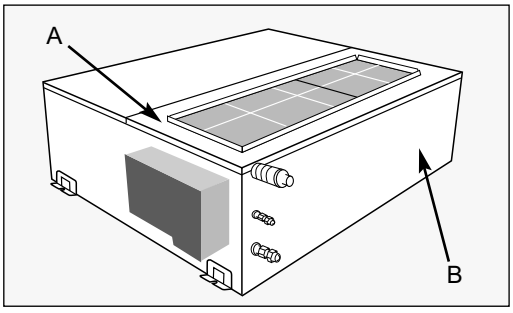


① Minimum gradient 5%

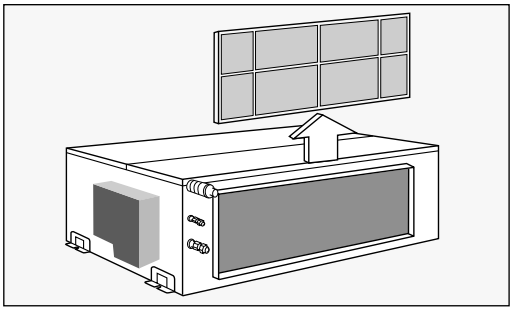


It can be configured for intake from below simply by inverting panels A and B.

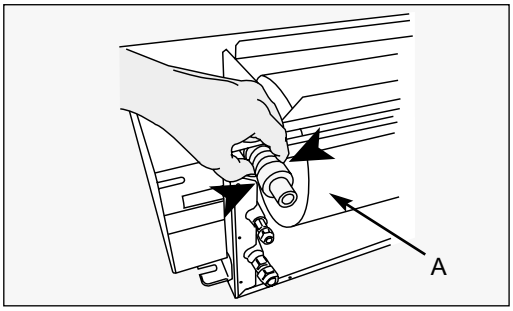




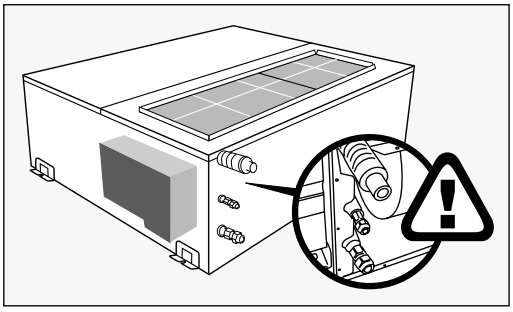
During the operation, take the following precautions to avoid damaging parts of the unit:
remove the filter.



Before removing the rear panel (A) pull the drain pipe out of its seat by pressing gently on the sides.



When fitting the rear panel, take care not to damage the insulation of the pipes with the edges of the panels. On completion of the operation, fit the filter.

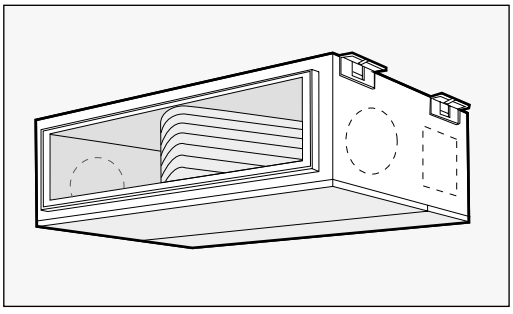


AIR OUTLET CONFIGURATION

The Carrier 40DMC unit is predisposed for either side or front air outlet.

<u>Installation with front outlet</u>

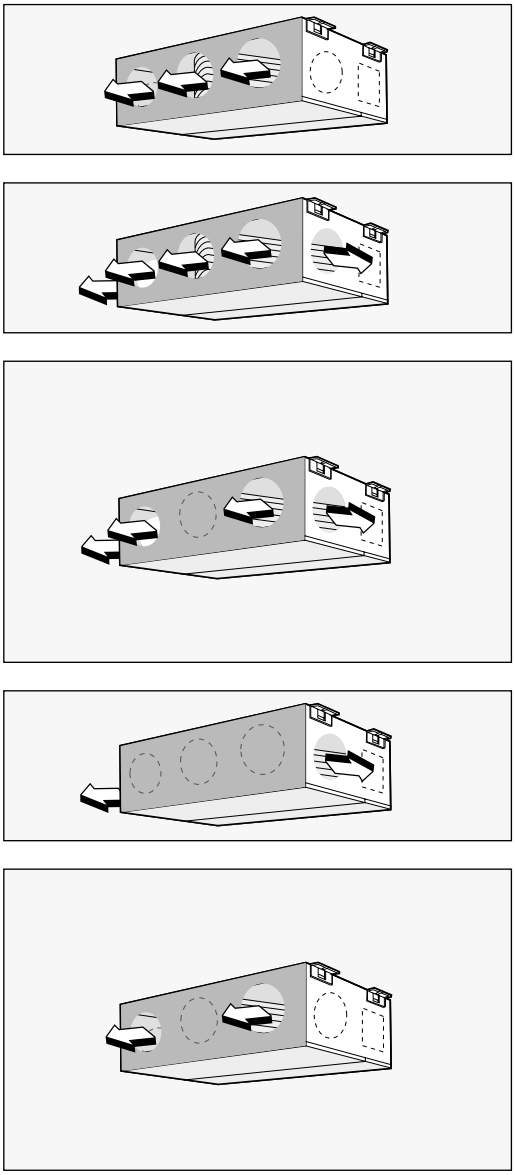
The standard factory configuration is with front outlet and ducting with rectangular conduits



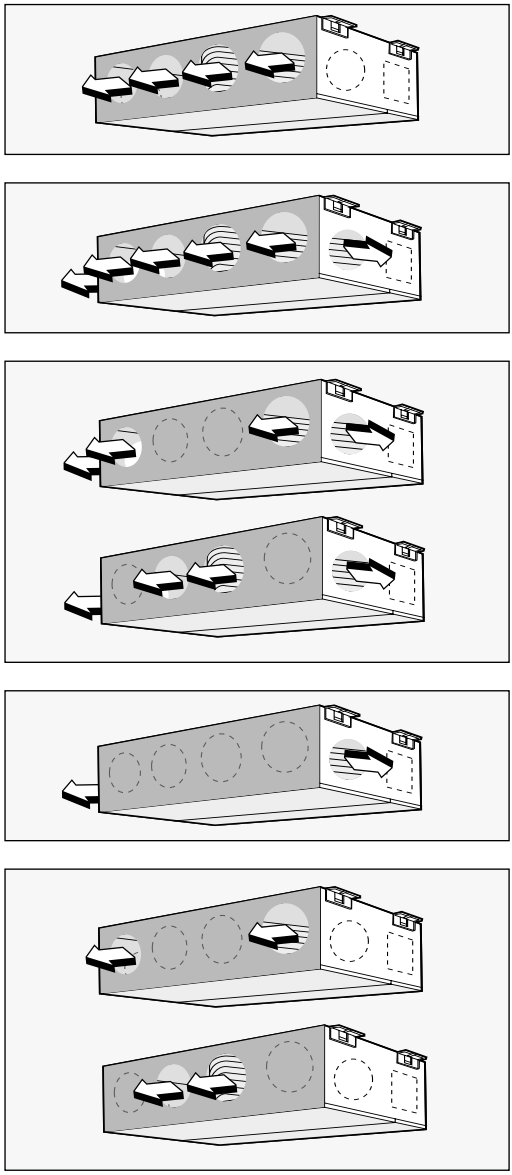
The unit can be predisposed for ducting with circular conduits.

Each of the following configurations can be executed with the items supplied with the unit.

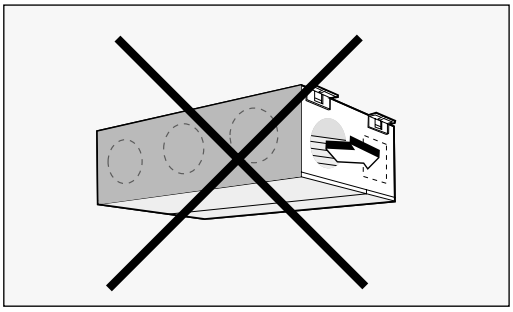
40DMC018, 024, 028



40DMC036, 052, 060

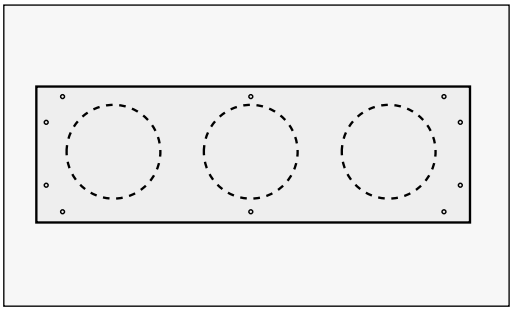


Do not adopt configurations other than those indicated above, as this may compromise the correct operation of the unit. In particular, avoid operating the unit with just one aperture.

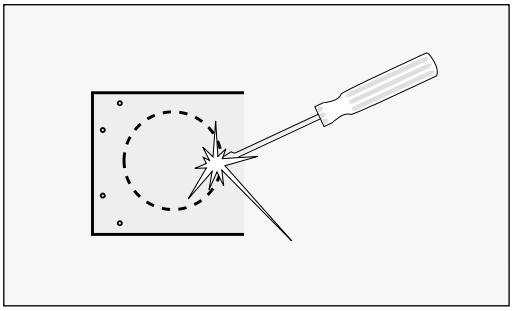


Predisposition of the unit for circular front outlets

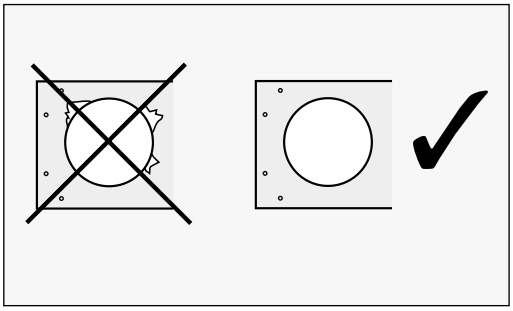
The unit is supplied with a front enclosure panel with 8” diameter circular cut-outs.



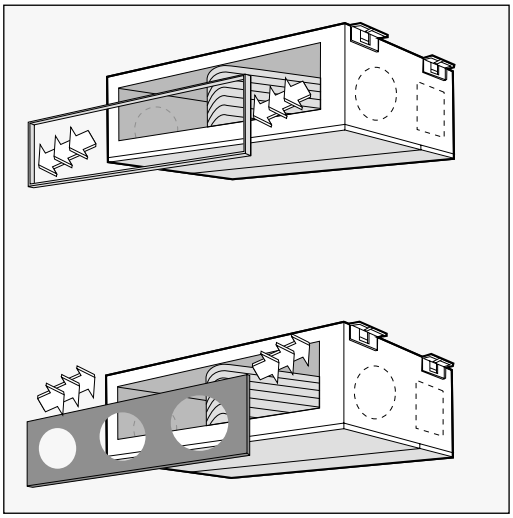
Before removing the cut-outs, cut the insulation on both sides of the panel with a suitable knife. This facilitates opening and prevents damage to the insulation.



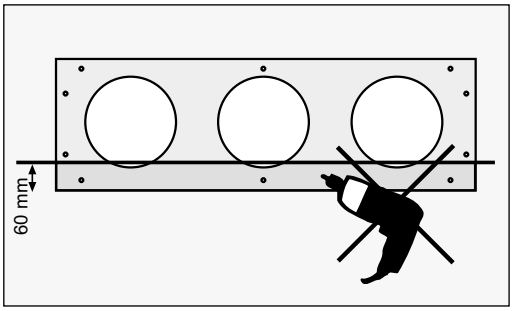
After removing the cut-outs, make certain that the insulation covers all the parts in steel sheet.



After removing the cut-outs, replace the front panel of the unit.Also using the screws supplied.

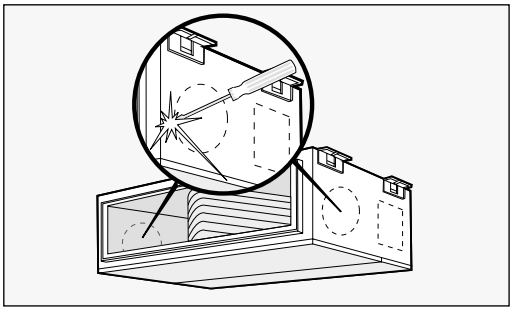


The area of the panel which can be used for fixing the 8” circular flanges (not supplied) is as shown in the figure. Avoid drilling or fastening screws in the shaded area of the figure so as not to damage the unit’s tray.

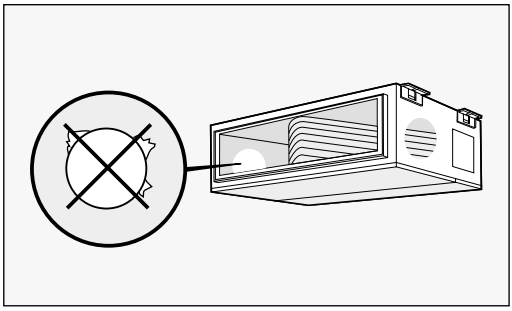


Installation with side outlet

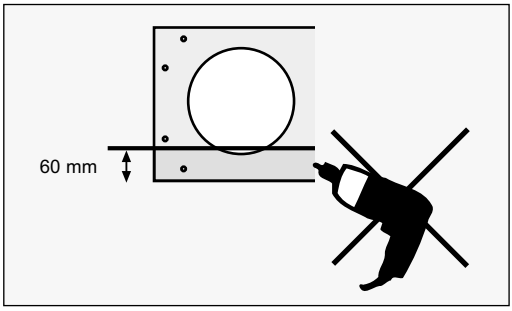
The unit is predisposed so that it can be installed in corridors to make optimum use of the two circular outlets on the sides. In order to prepare the unit for this type of installation, proceed as follows:
remove the two cut-outs in the sides of the unit.



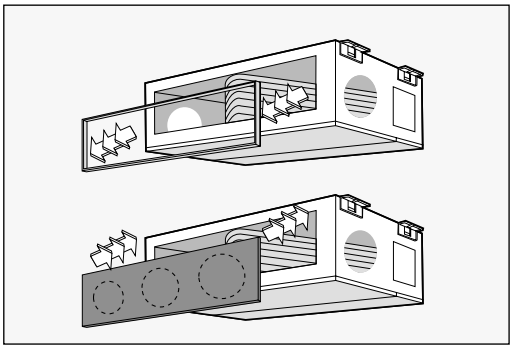
After removal, make certain that the insulation covers the steel sheet around the cut area.



The area which can be used for fixing the 8” circular flanges (not supplied) is as shown in the figure.
Avoid drilling or fastening screws in the areas highlighted in the figure so as not to damage the unit’s tray.

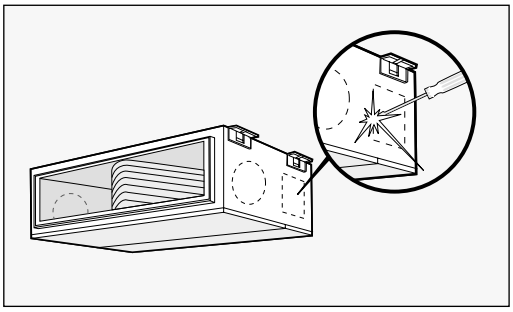


Replace the front panel of the unit with the panel supplied.



FRESH AIR INTAKE

There is a cut-out on the side of the unit, which can be used as a fresh air intake. It can be opened with a screwdriver.



DUCTING

Important: the ducting must be designed and calculated by qualified technicians.

Determine the dimensions of the ducts according to the air flow rate required and the available static pressure of the unit (refer to the fan diagrams on previous pages).

You are advised to adhere to the following recommendations:

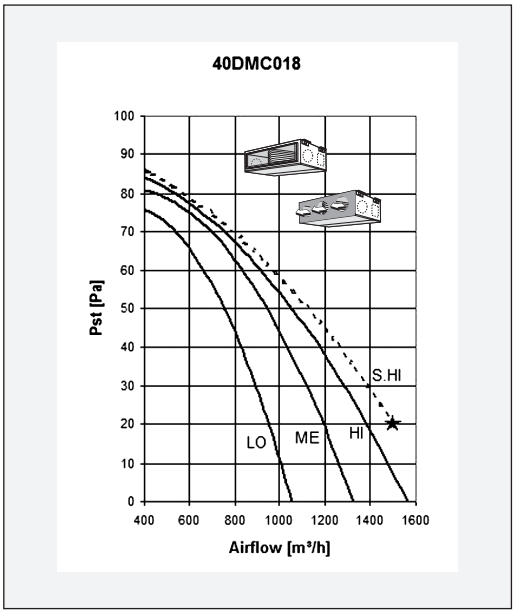
• regardless of the type of duct used, it must not be made of inflammable material, which produces toxic gases in the event of fire. The internal surfaces must be smooth and not contaminate the air passing through them. You are advised to use ducts in galvanised steel, suitably insulated, to prevent the formation of condensate and thermal losses.

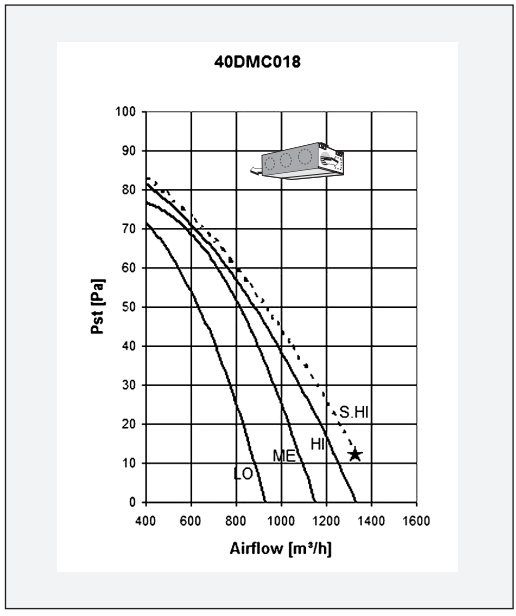
• The ducts should be joined with flexible couplings which absorb vibrations, prevent noise transmission inside the ducting and allow access to the unit.

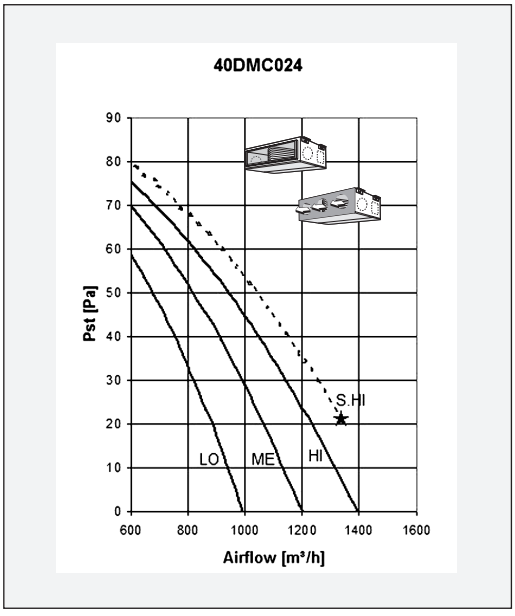
• As far as possible, avoid bends near the unit's air outlet. If this is not possible, the radius of curvature must be as wide as possible; use internal deflectors if the duct is of large dimensions.

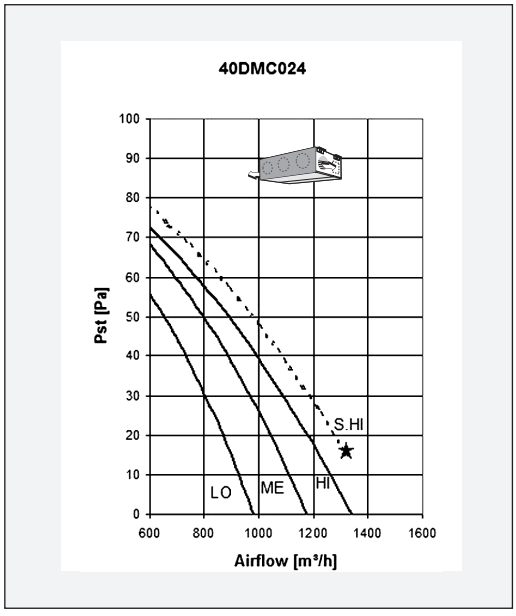
Unit specification graphs

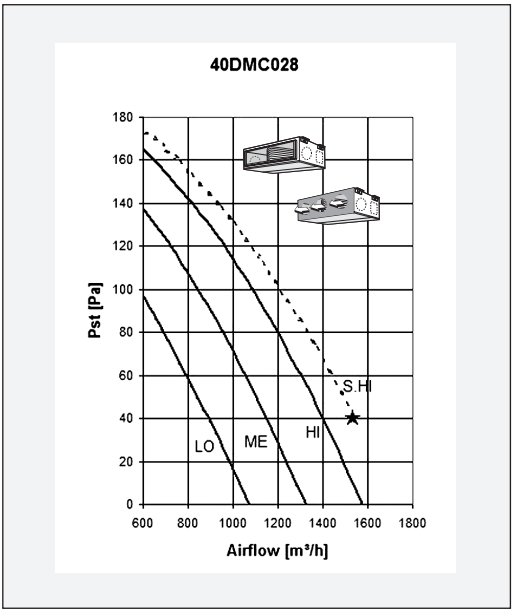
Warning! The unit is configured for three speeds, LO-ME-HI. On installations in which it is necessary to set the speed S.HI (see “electrical connections” section), the minimum counter-pressure at the outlet must reach the value shown in the diagrams below (see ★).

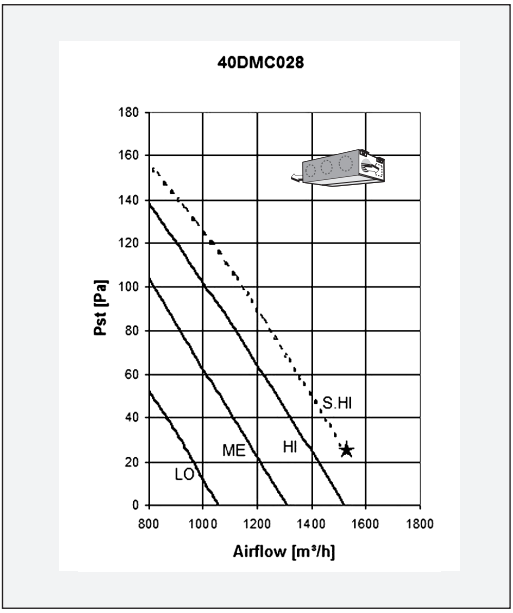


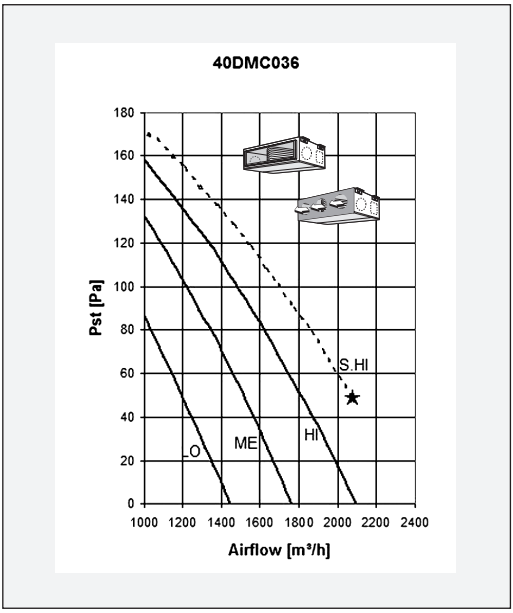


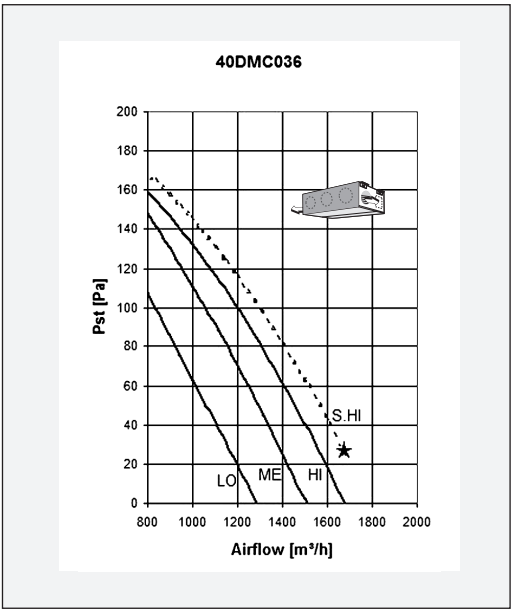


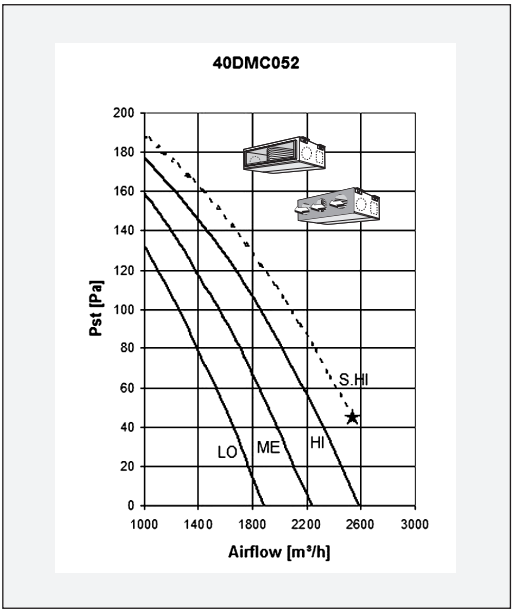


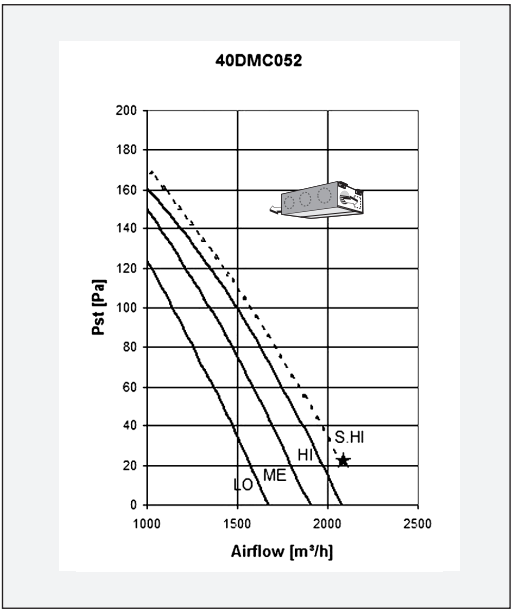

40DMC028
Pst [Pa]
Airflow [m³/h]
S.HI
HI
ME
LO

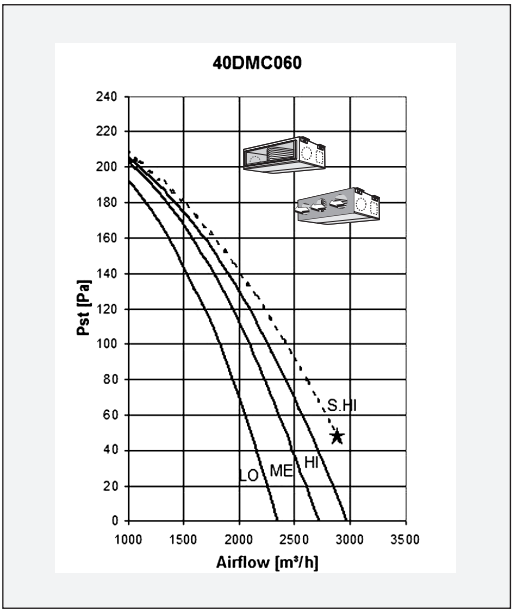

40DMC028
Pst [Pa]
Airflow [m³/h]
S.HI
HI
ME
LO

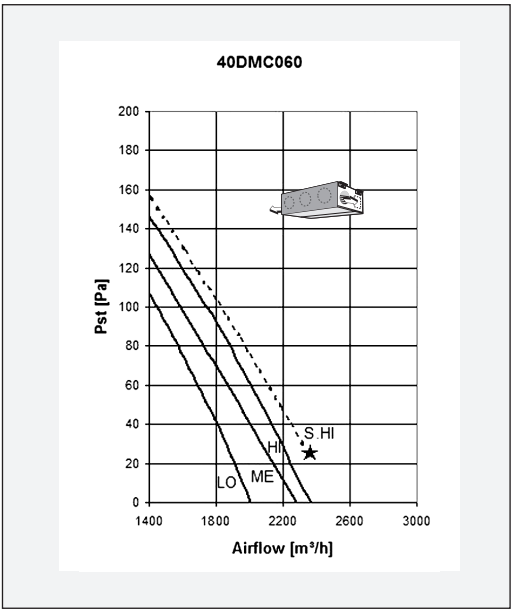

40DMC036
Pst [Pa]
Airflow [m³/h]
S.HI
HI
ME
LO


40DMC036
Pst [Pa]
Airflow [m³/h]
S.HI
HI
ME
LO


40DMC052
Pst [Pa]
Airflow [m³/h]
S.HI
HI
ME
LO


40DMC052
Pst [Pa]
Airflow [m³/h]
S.HI
HI
ME
LO


40DMC060
Pst [Pa]
Airflow [m³/h]
S.HI
HI
ME
LO


40DMC060
Pst [Pa]
Airflow [m³/h]
S.HI
HI
ME
LO

Coolant connections

Warning!

Connect the indoor and outdoor units using copper pipes with flared connections (not supplied). For the lines, use insulated, unwelded, degreased and de-oxidised copper pipe, (Cu DHP type to ISO 1337), suitable for operating pressures of at least 4200 kPa and for a burst pressure of at least 20700 kPa. Copper pipe for hydro-sanitary applications is completely unsuitable.

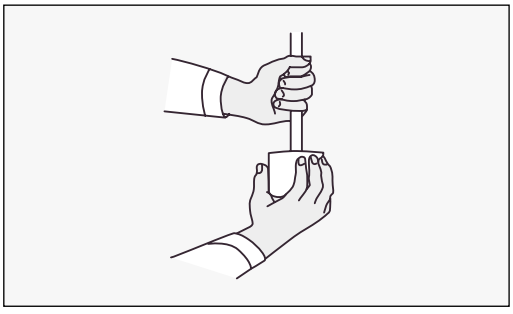
For sizing and limits (height difference, line length, max. bends, refrigerant charge, etc.) see the outdoor unit installation manual.

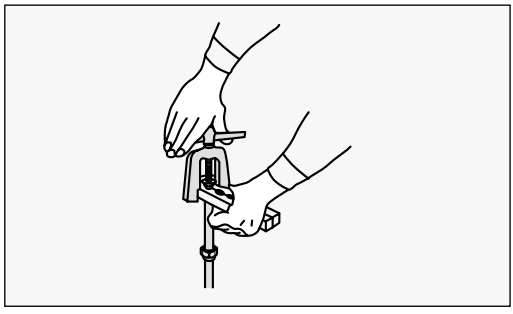
Pipe diameter				
Unit	Gas (intake)		Liquid (outlet)	
	mm	inches	mm	inches
40DMC018	12.70	1/2”	6.35	1/4”
40DMC024	12.70	1/2”	6.35	1/4”
40DMC028	15.87	5/8”	6.35	1/4”
40DMC036	19.05	3/4”	9.52	3/8”
40DMC052	19.05	3/4”	9.52	3/8”
40DMC060	19.05	3/4”	9.52	3/8”

FLARING THE PIPE ENDS

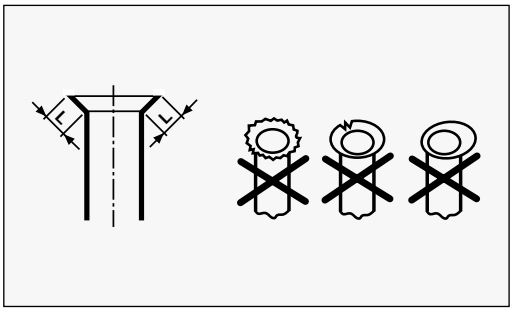
Remove the protection caps from the ends of the copper pipes. Hold the pipe with the end pointing downwards, cut off the excess and remove any swarf with a burr removal tool.

Remove the unions from the body of the “FLARE” connection of the unit and slide them onto the pipes. Flare the end of the pipe with an appropriate tool.

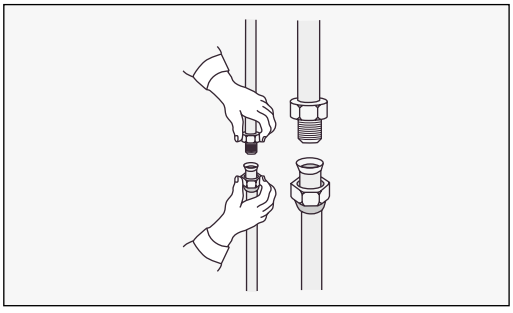




The flare must be free from burrs and imperfections. The walls of the flare must be of identical length.

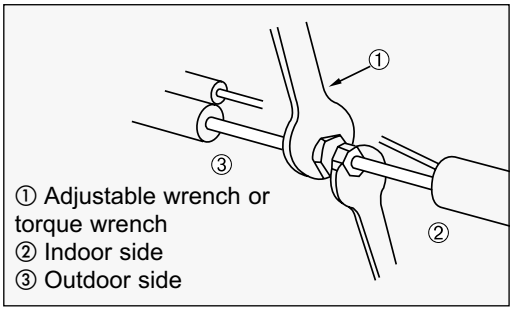


Lubricate the end of the pipe and the thread of the “FLARE” connection with non-freezing oil. Tighten the union by hand for a few turns and then tighten each connection with two wrenches, to the torque shown in the table.

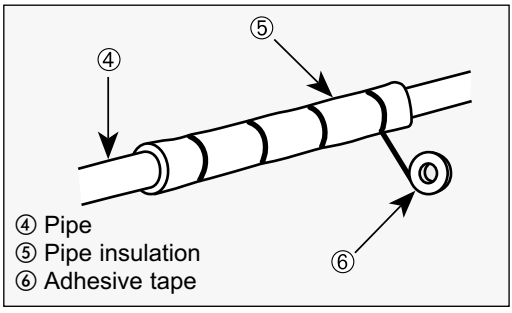


CONNECTING THE PIPE TO THE UNIT

If the torque setting is insufficient, refrigerant fluid will leak from the connection.



Pipe diameter		Torque setting
mm	inches	Nm
6.35	1/4”	18
9.52	3/8”	42
12.70	1/2”	55
15.87	5/8”	65
19.05	3/4”	100



Once you have completed all the connections, check for possible leaks using a leak detector specifically designed for HFC refrigerants. Clad the pipes and taps with anti-condensation insulating material and fix with adhesive tape, without compressing the insulation too much. Any cuts or tears in the insulating material must be repaired. The pipes and electrical cables connecting the indoor unit with the outdoor unit must be fixed to the wall with suitable ducts.

Electrical connections

Warning! Powering the unit with an incorrect voltage invalidates the Carrier warranty.

Important:

• The electrical connection of the system must be made from the outdoor unit.

• To make the electrical connections for the unit (cable entry, section of conductors, safety devices, etc.), consult the electrical data table and the wiring diagram attached to the unit, and comply with the standards in force for the installation of air conditioning appliances.

• The installer must install all the safety devices in accordance with the legislation in force.

EXECUTION

• Make the coolant connections first and then the electrical connections. For disassembly, proceed in reverse order.

• Make the earth connection before the electrical connections.

• Make the electrical connection between the two units first and then make the connection to the mains electricity supply.

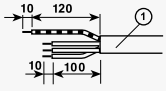
• For correct connection, refer to the wiring diagrams in Figures A and B.

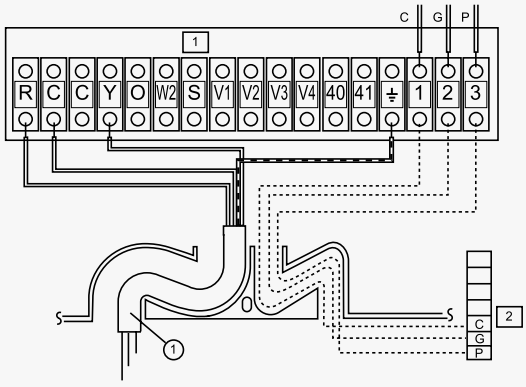
FIG. A **Cooling only**

40DMC018, 024, 028, 036, 052,060

NOTES: Refer to the installation manual for the outdoor unit for connection to the mains electricity supply.

① Interconnection cable (H07RN-F)





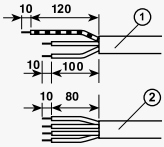
	interconnection between indoor and outdoor unit (mm²)													CRC		
model	**GND**	**R**	**C**	**Y**	**O**	**W2**	**S**	**V1**	**V2**	**V3**	**V4**	**40**	**41**	**1**	**2**	**3**
40DMC018,024,028 40DMC036,052,060	4x1				Not connected									3 x 0.75 A03VV-F		

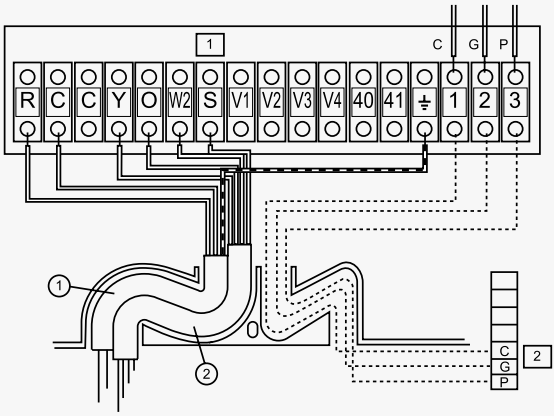
FIG. B **Heat pump heating mode**

40DMC018, 024, 028, 036, 052,060

NOTES: Refer to the installation manual for the outdoor unit for connection to the mains electricity supply.

① Interconnection cable (H07RN-F)
② Interconnection cable (A07RN-F)





	interconnection between indoor and outdoor unit (mm^2)													CRC		
model	**GND**	**R**	**C**	**Y**	**O**	**W2**	**S**	**V1**	**V2**	**V3**	**V4**	**40**	**41**	**1**	**2**	**3**
40DMC018,024,028 40DMC036,052,060	3x1			4x1				Not connected						3 x 0.75 A03VV-F		

Terminal board legend

1 Outdoor unit

⏚ Earth
R Line (phase) connection to outdoor unit
C Neutral, connection to outdoor unit
Y Compressor permissive
O Inversion valve control (heat pump only)
W2 Outdoor fan control
S End defrosting thermostat signal

V1, V2, V3, V4 Indoor fan speed
40, 41 Heating element control
1, 2, 3 Room Controller (CRC)

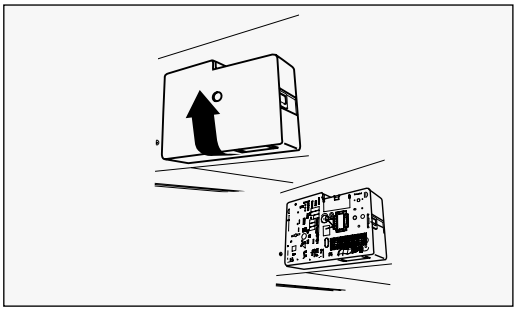
2 Room Controller (CRC)

P Power supply
G Earth
C Signal

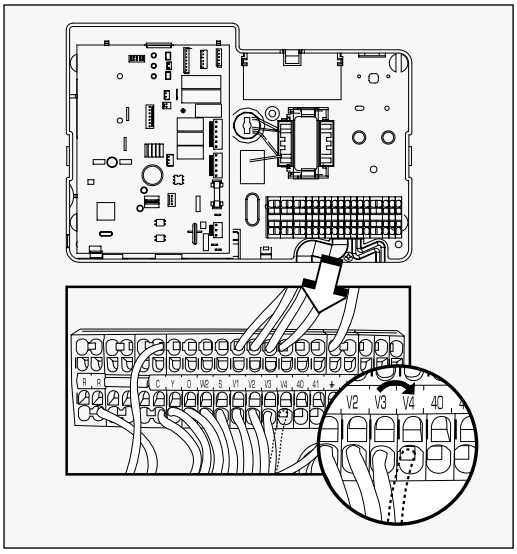
Selecting S.HI speed

The unit is configured for three speeds, LO-ME-HI. To select S.HI speed, proceed as follows:

• open the cover of the unit's electrical panel;



• move the brown cable from terminal V3 to terminal V4;



• close the cover of the electrical panel.

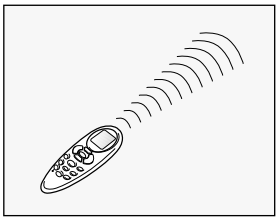
Controls

Warning! Disconnect the power supply before opening the control unit cover.

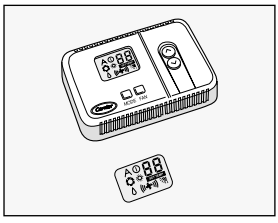
The unit can be used in conjunction with the infrared remote control or the "Room Controller" or "Zone Manager" cable type remote control (optional accessories).

Instructions for use of the cable-type and infrared remote controls are included in the respective manuals.

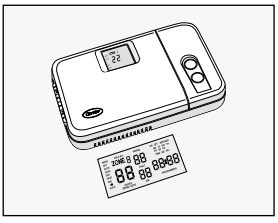
The control units must be opened and installed by qualified personnel only.



IR remote control



"Room Controller"



"Zone Manager"

Alarm code

The electronic card contains an internal diagnostic system which supervises the correct operation of the system. When the diagnostic system enters an alarm state, the red LED on the main electronic card flashes as follows:

• sequence of flashes of 0.5 seconds ON and 0.5 seconds OFF with an interval of 5 seconds.
• The number of flashes varies according to the error diagnosed.

Not all errors can be reset (see table below).

Error code	Error	Resettable *
3	Air temperature sensor	YES
4	Temp. sensor Indoor heat exchanger	YES
5	Temp. sensor Outdoor heat exchanger	YES
7	Outdoor unit error	YES
10	EEPROM corrupted	YES
11	Card serial number corrupted	YES
12	Address/zone number incomplete	YES

***NO:** Unplug the system from the power supply, check and repair if necessary. Power up the system.
YES: Check

Accessories

For accessories, consult the product catalogue and documentation.

User guide

On completion of installation and with the aid of the use and maintenance manual, instruct the user in the correct operation of the air conditioning system and how to select the functions, such as:

• switch-on and switch-off;
• control functions.

Give the user the installation manuals for the indoor and outdoor units and the use and maintenance manual so that they can be consulted for maintenance or other purposes.

Maintenance and disposal

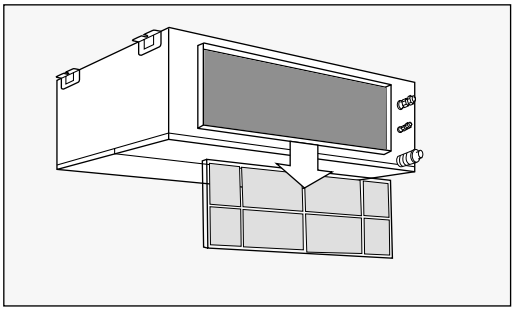
MAINTENANCE

Warning!
• The appliance must be maintained and cleaned internally only by qualified personnel.
• Always disconnect the appliance from the mains supply before starting any maintenance work and before accessing any internal components.

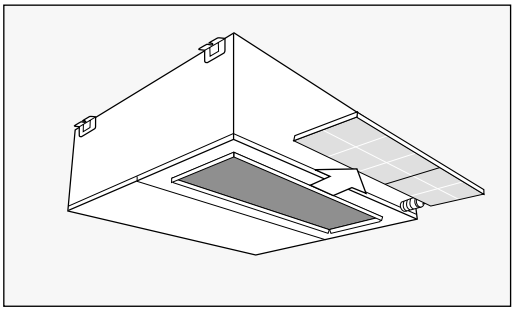
Air filter

Check that the filter is clean at least once a month or more frequently if the unit is installed in a dusty environment. Dirt in the filter reduces the air flow and the efficiency of the unit. It is advisable to clean or change the filter before the start of the winter season. To remove the filter, pull gently in the direction of the arrow.

Filter removal with air intake from the rear



Filter removal with air intake from below



Condensate drainage

During the summer, check that the condensate drain pipe is free from obstructions which could cause condensate to overflow.

Heat exchanger

At the beginning of the summer and winter seasons, check that the fins on the heat exchanger are not obstructed by foreign matter such as dust or fluff, etc.. Remove the air outlet grille and clean the heat exchanger, taking care not to damage the fins.

Motor

The motor is life-time lubricated. No lubrication is therefore necessary.

DISPOSAL

At the end of their useful life, the appliance and all its components must be disposed of at a suitably authorised differentiated disposal centre.

GB

The manufacturer reserves the right to change any product specifications without notice.tto

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